

CLAIMS

1. A moulded shield for a source of  $\gamma$ -rays said shield defining a cavity to receive said source and comprising a core layer of cured liquid silicone resin loaded with particulate  $\gamma$  radiation-shielding material adapted to surround a radiation source located in said cavity, said core layer being located between two outer layers of solid polymeric material.
2. A shield as claimed in any one of claims 1 to 3 wherein the particulate radiation shielding material comprises lead particles.
3. A shield as claimed in claim 1 or claim 2 in which the core is encapsulated in said solid polymeric material.
4. A shield as claimed in any one of claims 1 to 3 wherein the solid polymeric material comprises cured liquid resin.
5. A shield as claimed in claim 4 wherein the solid polymeric material comprises silicone.
6. A shield as claimed in any one of claims 1 to 5 wherein the outer layers are each 0.5 to 3mm thick.
7. A shield as claimed in any one of claims 1 to 6 wherein the core layer is 5 to 50mm thick.

Sub A2  
8. A shield as claimed in any one of claims 1 to 7 in the form of a tube with a longitudinal slit, for fitting over a pipe.

9. A shield as claimed in claim 8 wherein the slit is so formed as to prevent shine.

Sub A3  
10. A shield as claimed in any one of claims 1 to 7, comprising a plurality of separate cooperating parts which together define the cavity.

11. A shield as claimed in claim 10 comprising a pair of cooperating parts which fit together to provide a cavity for a pipeline T-junction.

12. A shield as claimed in claim 10 or claim 11 wherein the parts overlap when fitted together to enclose the cavity, to prevent shine.

Sub A4  
13. A shield as claimed in any one of claims 1 to 7 in the form of a dome.

14. A shield as claimed in any one of claims 1 to 7 in the form of a box.

15. A shielded  $\gamma$ -ray source wherein the shield is as defined in any one of claims 1 to 14 and the source is located in said cavity.

16. A shielded source as claimed in claim 15 wherein the source is a hot spot in the steam generating circuit of a nuclear-powered steam raising installation.

17. A shielded source as claimed in claim 15 wherein the source is a radioactive component retrieved from an area which is contaminated with radiation.
18. A shielded source as claimed in claim 15 wherein the source is a part of a gamma radiography device.
19. A method of forming a tubular  $\gamma$ -ray shield as claimed in claim 1, said method comprising the steps of
- applying a coating of curable liquid resin to the surface of a mandrel while rotating the mandrel about a horizontal axis and until the desired thickness is obtained and curing it to a self-supporting but tacky state to form an inside layer of the shield;
  - mounting the coated mandrel vertically in a cylindrical mould of larger diameter, with the axis coaxial of the mandrel with that of the mould;
  - pouring a curable mixture of silicone resin and particulate  $\gamma$ -ray radiation material into the annular gap between the coated mandrel and the cylindrical mould surface and curing the mixture to a self-supporting but tacky state to form the core layer of the shield;
  - removing the mandrel coated with the inside layer and core layer from the cylindrical mould, applying a coating of curable liquid resin to the exposed surface of the core layer while rotating the mandrel about a horizontal axis;
  - completing the cure of the layers, and
  - removing the cured product from the mandrel.